

# Seminar

## **Powering Sustainable Transportation: New Energy Paradigm Providing Greater Levels of Empowerment for Consumers**

### **Ali Emadi**

**Canada Excellence Research Chair in Hybrid Powertrain, McMaster University**

This presentation begins with the history of the automotive industry and explains the need for a paradigm shift toward a sustainable solution. Parallels with other industries such as the telecommunications industry are highlighted and it is explained how providing greater levels of empowerment for consumers is a powerful driving force for the next generation of electrified vehicles. This empowerment is part of a new paradigm in energy integrated with renewable energy sources, distributed generation systems, and smart grid. The presentation is then focused on the transportation electrification and how the paradigm shift began with more electric vehicles (MEVs), established by hybrid electric vehicles (HEVs), is gaining momentum by plug-in hybrid electric vehicles (PHEVs), and will be completed by electric vehicles (EVs).



Dr. Ali Emadi is the Canada Excellence Research Chair in Hybrid Powertrain and Director of McMaster Institute for Automotive Research and Technology (MacAUTO) at McMaster University in Hamilton, Ontario, Canada. Before joining McMaster University, Dr. Emadi was the Harris Perlstein Endowed Chair Professor of Engineering and Director of the Electric Power and Power Electronics Center and Grainger Laboratories at Illinois Institute of Technology (IIT) in Chicago, where he established research and teaching facilities as well as courses in power electronics, motor drives, and vehicular power systems. In addition, Dr. Emadi is the Founder and Chairman of Hybrid Electric Vehicle Technologies, Inc. (HEVT) – a university spin-off company of IIT. He is the recipient of numerous awards and recognitions. He was the advisor for the Formula

Hybrid Team at IIT, which won the GM Best Engineered Hybrid Systems Award at the 2010 competition. Dr. Emadi is the principal author/co-author of over 250 journal and conference papers as well as several books including Vehicular Electric Power Systems (2003), Energy Efficient Electric Motors (2004), Uninterruptible Power Supplies and Active Filters (2004), Modern Electric, Hybrid Electric, and Fuel Cell Vehicles, Second Edition (2009), and Integrated Power Electronic Converters and Digital Control (2009). He is also the editor of the Handbook of Automotive Power Electronics and Motor Drives (2005). Dr. Emadi is the inaugural general chair of the 2012 IEEE Transportation Electrification Conference and Expo (ITEC) and has chaired several IEEE and SAE conferences in the areas of vehicle power and propulsion. He is the Editor (North America) of the International Journal of Electric and Hybrid Vehicles.

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